
Socotrella, a New Genus of Stapeliad (Apocynaceae–Asclepiadoideae) from the Island of Socotra

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ABSTRACT. A new monotypic genus, *Socotrella* (Apocynaceae–Asclepiadoideae–Ceropegieae), is described with a single species, *S. dolichocnema* Bruyns. This is known only from the western limestone plateau of the island of Socotra. *Socotrella* differs from *Caralluma* R. Brown by the lack of a differentiated leaf rudiment and its accompanying small marginal hairs, as well as the very different pollinaria. Although some features of the pollinaria suggest a relationship to *Ballyanthus* Bruyns, *Duvalia* Haworth, *Duvaliandra* M. G. Gilbert, *Huernia* R. Brown, and *Whitesloanea* Chiovenda, the fact that many inflorescences are produced toward the tips of the stems in *Socotrella* at once distinguishes it from all these genera.

Key words: Apocynaceae, Asclepiadoideae, Ceropegieae, Socotra, *Socotrella*, stapeliad.

Socotrella Bruyns & A. G. Miller, gen. nov. TYPE:
Socotrella dolichocnema Bruyns, sp. nov.

A ceteris speciebus *Caralluma* absentia folii rudimentalis minuti et absentia dentium stipulaceorum distinguenda est, a *Duvalia*, *Duvaliandra*, *Ballyanthus*, *Huernia*, *Whitesloanea* caulis floriferis cum inflorescentiis multis prope apicem discedit.

Small, somewhat rhizomatous succulent. Stems decumbent, 50–150 mm long, 4–7 mm thick, dark green, smooth; tubercles arranged into 4 rows along stem, \pm rectangular, with spreading tooth 1–2 mm long near upper end, without leaf rudiment or stipular denticles. Inflorescences several per stem near apex, each bearing 1–5 flowers opening successively, with acuminate bracts 1–2 mm long around bases of pedicels; pedicel 25–42 mm long, \pm 1 mm

thick, ascending and holding flower facing upward; sepals \pm 1.5 mm long, 0.5 mm broad at base, ovate-lanceolate, acute. Corolla 18–22 mm diam., shallowly campanulate; outside pale yellow-green, glabrous and smooth; inside yellow with broad reddish longitudinal markings in tube, glabrous, finely papillate; tube 2 mm deep, 5–6 mm broad, cupular with flat base, without thickening in corolla around mouth; lobes 7–8 mm long, 3–4 mm broad at base, parallel-sided for much of length, obtuse, slightly convex inside. Corona 2 mm tall, 2 mm broad, raised up on stipe arising from swollen area in base of corolla tube, yellow; outer lobes reduced to minute flap beneath guide rails; inner lobes 0.5 mm long, erect and adpressed to backs of anthers, truncate-emarginate, with broad apically somewhat tuberculate and almost hemispherical dorsal appendage around base. Anthers erect alongside style head, margins shrinking slightly only on anthesis, almost deltate. Pollinium ellipsoidal, much longer than broad, pellucid margin exactly along outer edge toward apex, caudicle attached with small pad to ventral surface. Follicles unknown.

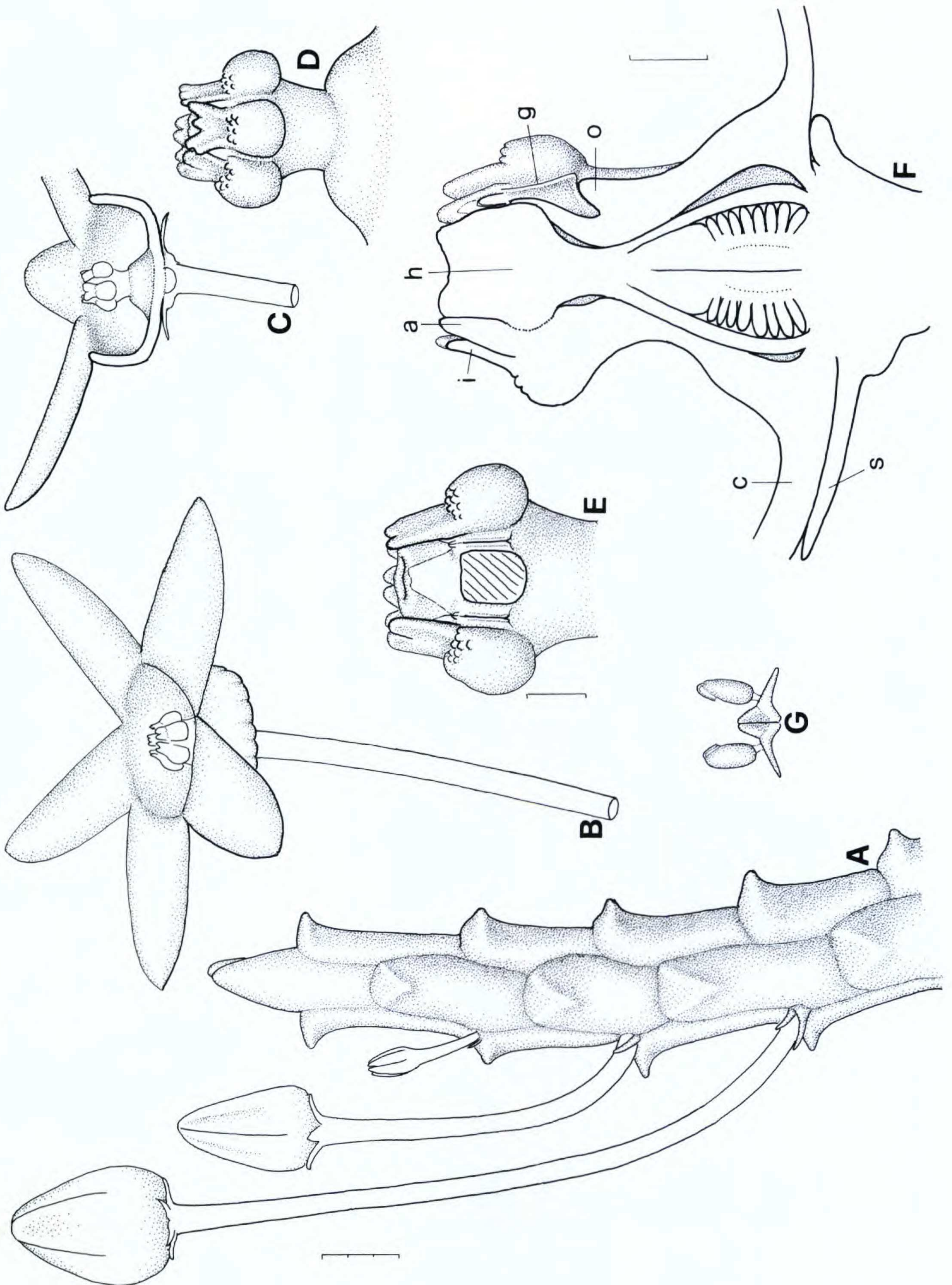
Socotrella dolichocnema Bruyns, sp. nov. TYPE:
Socotra. Western Plateau, 660 m, Feb. 2000, A. G. Miller 19110 (E). Figure 1.

Species unica, a *Duvaliandra dioscoridi* corona exteriori multum redacta et orificio nectareo parviore, a speciebus *Caralluma* polliniis parvis et corpuscula grandiore et alata differt.

When it was first collected, we suspected that this new species probably belonged to the genus *Caralluma*. The fairly large number of inflores-

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Figure 1. *Socotrella dolichocnema* Bruyns. —A. Upper portion of flowering stem with buds. —B. Side view of flower. —C. Side view of dissected flower. —D. Side view of gynostegium. —E. Side view of gynostegium with one inner corona lobe removed. —F. Half-flower showing center of flower only. —G. Pollinarium. a = anther; c = corolla; g = guide rail; h = style head; i = inner corona lobe; o = outer corona lobe; s = calyx. Scale bars: A–C, 3 mm (at A); D, 1 mm (at F); E, 0.5 mm; F, 0.5 mm; G, 0.25 mm (at F). Drawn from Miller 19110.



cences produced toward the apices of the relatively slender stems tended to reinforce this view.

However, a closer examination revealed that this new species differs from all known species of *Caralluma* by the complete lack of a differentiated leaf rudiment at the tip of each tubercle. In *Caralluma* (in the sense of Gilbert, 1990) this leaf rudiment is accompanied by small marginal hairs, which are also present around and often on the stipular denticles. Both these hairs and the stipular denticles are entirely lacking in this new species. Here the tubercle comes to a rounded end (Fig. 1A) with no ornamentation of this area at all.

In the complete lack of a differentiated leaf rudiment on the tubercles, *S. dolichocnema* is somewhat reminiscent of various species of *Orbea* (in the new and expanded sense of Bruyns, 2001, 2002 in press). Many of these have tiny stipular denticles alongside the leaf rudiment, and the leaf tapers into a fine point. The stems are also usually distinctively mottled with dark green on a paler background.

The flowers of *S. dolichocnema* are borne on relatively long pedicels (whence the specific epithet), which place them at the level of the tops of the stems. They are pretty and strikingly colored inside, with bright yellow on the lobes and the same color in the tube. In the tube there are also slightly irregular reddish markings, which somewhat resemble color that has run down the tube. This, as well as the shape of the flowers, is somewhat reminiscent of *Tromotriche umdausensis* (Nel) Bruyns from the arid west of southern Africa, but this resemblance is undoubtedly purely coincidental.

When one examines the gynostegium of this species, there appears to be no outer corona. The swollen platform on the base of the corolla tube on which the gynostegium arises is clearly not a candidate since it shows no subdivision into five parts at any stage of its development. However, the vertical section of the flower (Fig. 1F) reveals that there is a small erect flap of tissue beneath the guide rails (indicated by an "o"), which is not visible easily from the outside but which is all that there is here of the outer corona. Behind this flap there is a slight "nectarial orifice." Such a reduced outer corona is not known in any other northeast African stapeliad, and one has to look to the southern African genus *Piarranthus* R. Brown to find similarly reduced structures in the outer coronal series (Bruyns, 1999). It was stated (Gilbert, 1980: 101) that the outer corona of *Duvaliandra dioscoridis* (Lavranos) M. G. Gilbert was absent. However, this is not the case. In this species the outer corona consists of a spreading lobe laterally fused to the sides of the rather more massive inner lobes as well

as an erect ridge of tissue a little behind the bases of the guide rails and enclosing a more significant "nectarial orifice" than is present in *S. dolichocnema*. This is somewhat different from the situation in *S. dolichocnema*, where the spreading lobe is absent.

In *S. dolichocnema* the inner corona lobes are, as usual, adpressed to the backs of the anthers and, since the anthers are erect here, the inner corona lobes are erect, too. Each inner corona lobe has a noticeably swollen, tuberculate dorsal appendage. An examination of early stages of the flowers shows that these dorsal appendages are derived from the same meristem as the inner lobe itself and are not part of the outer series, as is the case, for example, in many species of *Piarranthus* (Bruyns, 1999).

The vertical section of the flower also shows the arrangement of the style head and the anthers. Here the style head projects well above the level of the corpuscles and the anthers are erect against it. This situation is unique among the stapeliads, where the top of the style head is generally around the level of the corpuscle and the anthers are normally horizontal on top of it (Bruyns, 2000a).

The pollinaria of this new species are also most unusual. The corpuscle is comparatively large and about equally long as broad, with inordinately long lateral wings. The pollinia are ellipsoidal and much longer than broad with a small insertion crest running for a short distance down the outer edge. The pollinia are unusually small relative to the size of the corpuscle. Pollinaria with this shape are not known in *Caralluma*, where the corpuscle is always comparatively small, with very small lateral wings, and the pollinia are large relative to the size of the corpuscle. Similarly, pollinaria like those of *S. dolichocnema* are unknown in *Orbea*, where the pollinium is always much larger and D-shaped with the insertion crest twisting from the outer edge to the upper surface of the pollinium.

The shape of the corpuscle is similar to what one finds generally in *Duvalia*, *Huernia*, as well as in the monotypic genera *Ballyanthus* and *Whitesloanea* from northern Somalia and *Duvaliandra* from Socotra. The ellipsoidal pollinia are also similar in these genera, though they are far smaller in the new species. *Socotrella* differs from *Ballyanthus*, *Duvalia*, *Duvaliandra*, *Huernia*, and *Whitesloanea* by the fact that several inflorescences are produced on each flowering shoot, and they all arise toward the tips of the stems, whereas in these other genera there is only one inflorescence per stem often toward the apex (*Ballyanthus*) or one inflorescence usually near the base of the stem only in *Duvalia*, *Duvaliandra*, *Huernia*, and *Whitesloanea*.

This new genus brings to two the number of monotypic genera of stapeliads that are known from Socotra, the other being *Duvaliandra*, whose single species, *D. dioscoridis*, is found in the granitic mountains of the northeast of the island. The present new genus and species was discovered in February 2000 in the west of Socotra on a limestone plateau with dwarf shrubland dominated by *Croton socotranus* Balfour f., *Pulicaria stephanocarpa*, *Buxus hildebrandtii* Baillon, and *Cissus hamade-rohensis* A. R. Smith. It might seem peculiar that yet another monotypic genus of stapeliad is being described. The last one described in this journal (Bruyns, 2000b) occurred on the edge of the botanically little-known area of southern Angola. Many of the succulents of Socotra are related to others in Somalia, where botanical exploration is also not very advanced. Consequently, it is possible that fur-

ther exploration may show that both these new taxa are not as isolated in their relationships among the stapeliads as they seem to be at present.

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